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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,698	11/29/2006	Damian Fiolka	20228-013US1 HF 06 179	5439

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MINNEAPOLIS, MN 55440-1022

EXAMINER

CALLAWAY, JADE R

ART UNIT	PAPER NUMBER
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2872

NOTIFICATION DATE	DELIVERY MODE
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12/02/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 10/580,698	Applicant(s) FIOLKA ET AL.	
	Examiner JADE CALLAWAY	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/25/06, 8/27/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 82-84, 92, 93, 103, 104, 110, 115 and 117-122 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 82-84, 110, 115, 117-122 is/are rejected.
- 7) ☒ Claim(s) 92, 93, 103 and 104 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :5/25/06, 8/21/06, 9/29/06, 7/30/07, 8/6/07, 9/20/07, 3/7/08, 3/28/08, 5/20/08, 8/8/08, 9/8/08, 10/15/08.

DETAILED ACTION

Response to Amendment

1. The preliminary amendments to the Claims and Specification, in the submission dated 5/25/06, are acknowledged and accepted.
2. The preliminary amendments to the Claims, in the submission dated 8/27/08, are acknowledged and accepted.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

Drawings

4. The drawings were received on 5/25/06. These drawings are acceptable.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The

Art Unit: 2872

disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. Abstract, line one delete "consisting of"

Claim Objections

7. Claim 103 is objected to because there are values of integer n which would render the expression undefined. Claim 104 is dependent on claim 103 and inherits the same deficiencies as claim 103. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 82-84, 110 and 115 are rejected under 35 U.S.C. 102(b) as being anticipated by Schafer (4,755,027).

Consider claims 82 and 84, Schafer teaches (e.g. figures 1, 3 and 5) an optical element comprising: a polarization-modulating optical element (12, 14, 16, rotational symmetric bodies) comprising an optically active crystal (quartz) having an optical axis, the polarization-modulating element having a thickness profile that, as measured in the direction of the optical axis is variable (each element has a variable thickness profile), wherein the polarization-modulating optical element is configured to transform an entering light bundle with a first linear polarization distribution (light from preliminary polarizer 21) into an exiting light bundle with a second linear polarization distribution

Art Unit: 2872

different from the first linear polarization distribution, and the second linear polarization distribution is an approximately tangential polarization distribution [col. 2, lines 39-68, col. 3, lines 42-68, col. 4, lines 23-66].

Consider claim 83, Schafer teaches (e.g. figures 3 and 5) an optical element wherein: when a first linearly polarized light ray passes through the optical element, a plane of oscillation of the first linearly polarized light ray is rotated by a first angle; and when a second linearly polarized light ray passes through the optical element, a plane of oscillation of the second linearly polarized light ray is rotated by a second angle different from the first angle [col. 4, lines 23-66].

Consider claim 110, Schafer teaches (e.g. figure 1) an optical arrangement comprising: a polarization-modulating optical element (12, 14, 16, rotational symmetric bodies); and a second polarization modulating element (21, polarizer) arranged so that, when light passes through the optical arrangement, the light can pass through the first and the second polarization-modulating elements [col. 2, lines 39-67].

Consider claim 115, Schafer teaches (e.g. figures 3 and 5) an optical arrangement wherein the second polarization-modulating element causes a 90 degree rotation of the oscillation plane of a linearly polarized light ray passing through the optical element (at least one light ray will have a 90 degree rotation) [col. 2, lines 39-67, col. 4, lines 23-66].

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2872

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 117-118 and 120-122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schafer (4,755,027) in view of Schuster (6,392,800).

Consider claims 117 and 118, Schafer does not disclose that the optical element is in a system comprising a microlithography illumination system and a projection objective. Schafer and Schuster are related as polarizing systems. Schuster teaches (e.g. figure 5) a microlithography optical system (microlithographic projection exposure system) comprising a projection objective (54, objective) and an optical element (55, optical arrangement) [col. 6, lines 39-52]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Schafer, as taught by Schuster, in order to provide an optical arrangement that permits homogenous coupling of light into optical boundary surfaces with high aperture and with low loss and low scattered light.

Consider claim 120, the modified Schafer reference discloses (e.g. figure 5 of Schuster) a method comprising manufacturing a micro-structured semiconductor component (60, 61 resist film and wafer) using a system in accordance with claim 117 [col. 6, lines 39-67, col. 7, lines 1-3 of Schuster].

Consider claim 121, Schafer discloses (e.g. figures 1, 3 and 5) a system comprising: a polarization-modulating optical element (12, 14, 16, rotational symmetric bodies) comprising an optically active crystal having an optical axis, the polarization-modulating optical element having a thickness profile that, as measured in the direction

Art Unit: 2872

of the optical axis is variable (each element has a variable thickness profile) [col. 2, lines 39-68, col. 3, lines 42-68, col. 4, lines 23-66]. However, Schafer does not disclose that the optical element is in a system comprising a microlithography illumination system and a projection objective. Schafer and Schuster are related as polarizing systems.

Schuster teaches (e.g. figure 5) a microlithography optical system (microlithographic projection exposure system) comprising a projection objective (54, objective) and an optical element (55, optical arrangement) arranged in the illumination system [col. 6, lines 39-52]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Schafer, as taught by Schuster, in order to provide an optical arrangement that permits homogenous coupling of light into optical boundary surfaces with high aperture and with low loss and low scattered light.

12. Claim 119 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schafer (4,755,027) in view of Schuster (6,392,800) as applied to claims 82 and 117 above, and further in view of Switkes et al. (2002/0163629).

Consider claim 119, the modified Schafer reference does not disclose a substrate or an immersion medium with a refractive index different from air that is between the substrate and an optical element nearest to the substrate. Schafer, Schuster and Switkes et al. are related as illumination systems. Switkes et al. teaches (e.g. figure 1a) a system comprising a substrate (115, optic surface) and an immersion medium (120, index matching medium) with a refractive index different from air that is disposed between the substrate and an optical element nearest to the substrate [col. 6, lines 39-67, col. 7, lines 1-3]. It would have been obvious to a person of ordinary skill in

Art Unit: 2872

the art at the time the invention was made to modify the device of the modified Schafer reference, as taught by Switkes et al., in order to provide low or substantially zero scattering of projected light through the immersion medium.

Allowable Subject Matter

13. Claims 92-93 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JADE CALLAWAY whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 7:00 am - 4:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
/Jade R. Callaway/
Examiner, Art Unit 2872

/Stephone B. Allen/
Supervisory Patent Examiner
Art Unit 2872